



Lighting Research Program



Project 2.2: LED Task Light Lawrence Berkeley National Laboratory

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**Funded by California Energy Commission's
Public Interest Energy Research (PIER) Program**

Project 2.2: LED Task Light

Product: *A high-performance task light using state-of-the-art LED technology and thermal management technology*

Current Technology

- 25-30 LPW White LEDs
- Single 1 W Devices
- Separate large plastic lens for each LED
- Metal core circuit boards

New Technology

- 60 LPW White LEDs
- Aggregation of many LED die on a single assembly
- Integrated optics
- New graphite core board for better thermal management
- New fixture design by Luxo

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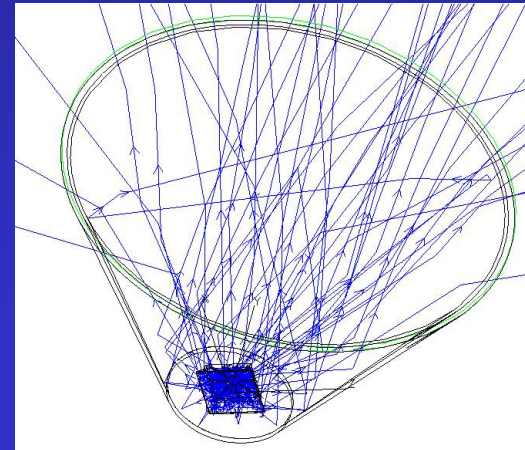
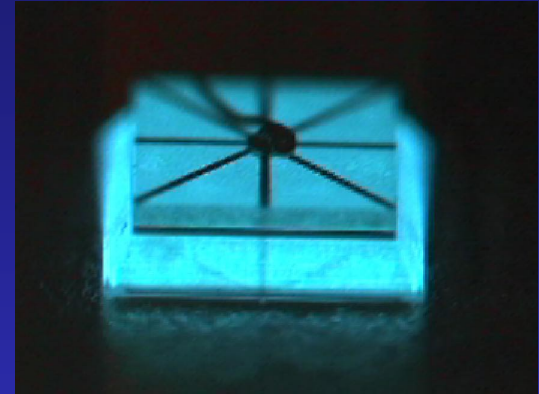
Design Parameters

- 4 Dimension Flexibility: 3 dimension in space (x,y,z) and 1 dimension in flux.
- Power Design concepts: 1) portable luminaires that have incorporated power sources and a wall plug. 2) luminaires integrated into the furniture deriving power from a source within the furniture.
- Performance: Equal to or greater in efficiency to comparable compact fluorescent luminaires.
- Form Factor: Design fixtures to take advantage of the low profile of these new sources.

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Accomplishments To Date

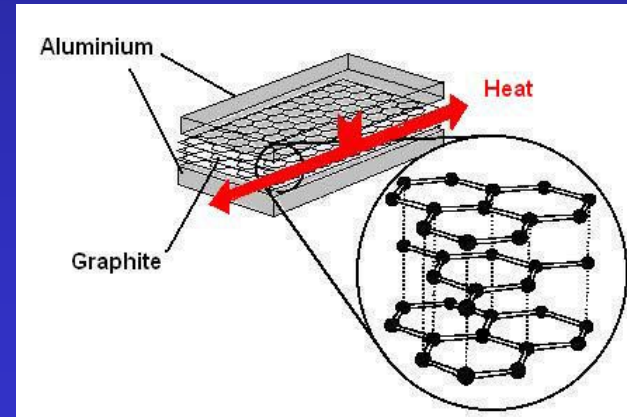
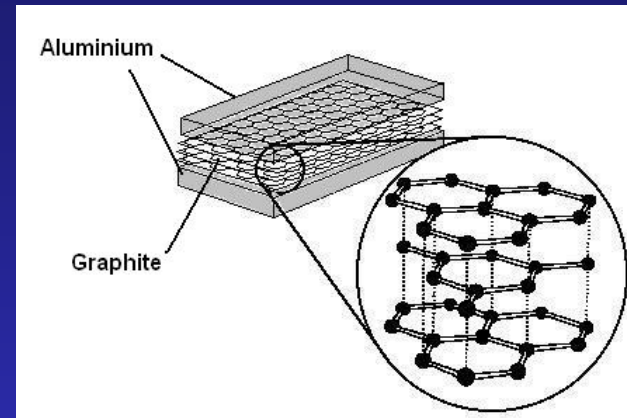
- LED partner, Cree Lighting, has recently announced 65 LPW white LEDs at low currents
- Optical Design for micro-optical assembly for the LEDs is progressing



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Accomplishments To Date

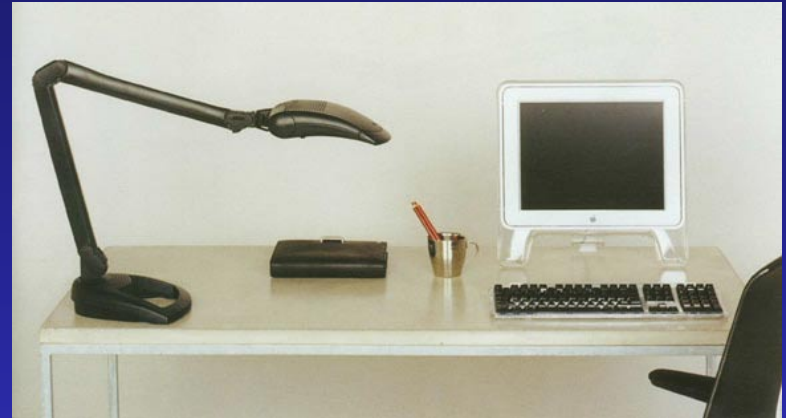
- Thermal management assembly board is being prototyped by partner, Permlight
- Advanced Transformer as agreed to partner to make the necessary ballast with variable intensity



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Accomplishments To Date

- Luxo, luminaire manufacturer, is developing designs to meet both the US and European markets
- Prototypes of alternative designs are being developed through a collaboration with the UC-B Architecture Dept.



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Opportunity

- To develop a high efficiency luminaire incorporating a light source that will have a life equal to the luminaire.
- To develop the first aggregated LED light source with a luminous output comparable to incandescent and compact fluorescent sources.
- To develop a LED light source system, lamp and ballast, that will have use in many applications.
- To develop a light source which maximizes the performance of the LEDs by thermal management, requiring fewer die thereby lower product cost.